



Friends of the Earth Scotland

Friends of the Earth Scotland's response to the Draft Energy Strategy and Just Transition Plan consultation

Respondent Information

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Publishing Preference

Publish response with name

We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for the Scottish Government to contact you again in relation to this consultation exercise?

Yes

Introduction

About us

Friends of the Earth Scotland exists to campaign, with partners here and across the globe, for a just transition to a sustainable society. We are Scotland's leading environmental campaigning organisation; an independent Scottish charity with a network of thousands of supporters and active local groups across Scotland. We are also part of the largest grassroots environmental network in the world, uniting over 2 million supporters, 75 national member groups, and some 5,000 local activist groups – covering six continents.

Introductory comments

We welcome the opportunity to respond to the Scottish Government's consultation on the draft Energy Strategy and Just Transition Plan (ESJTP). In this section we set out the overarching points we wish to input to this consultation process, which have relevance across all questions, before going on to answer certain questions in more detail.

Tackling the climate crisis has never been more urgent. In the 5 years since the last energy strategy was finalised, climate science and the reality of climate impacts around the world have made it clear that nothing short of a transformation of the economy and the energy systems it depends on is required to avoid catastrophic warming.

With critical 2030 climate targets looming, it is essential that the ESJTP sets out a comprehensive strategy for a managed and just phase out of the extraction and use of fossil fuels, moving to a fully renewable energy system, run for the benefit of people and planet.

However, the draft ESJTP presented for consultation does not live up to its title. To be such, it would need to set out what is going to be done, by when and how. Instead what the current version does is articulate a vision (which is in some respects welcome and ambitious) and compile existing policies and strategies, failing to fill in the gaps or address lack of coherence between these.

- **Ending oil & gas production and fossil fuel use**

On the central issue of ending our dependence on fossil fuels and phasing out oil and gas, the draft ESJTP cites research by Ernst & Young which shows that North Sea production will likely be only 3% of 1999 levels by 2050.

As a rich historical polluter, Scotland has a duty to move faster on fossil fuel phase out than poorer nations who have done less to cause the crisis. Experts at the Tyndall Centre for Climate Research have calculated that for only a 67% chance of keeping to 1.5°C, the UK must end oil and gas production by 2031.¹ This date takes into account the capacity of different producer nations to phase out extraction from an equity perspective such as providing basic needs of citizens and a just transition. For the UK, as a wealthy country with oil and gas a relatively small part of the overall economy, this date should enable sufficient

¹ [Phaseout Pathways for Fossil Fuel Production Within Paris-Compliant Carbon Budgets](#)

time to ensure the transition is fair to workers and communities who currently rely on the industry for their livelihoods.

Climate science is clear that in order to stay within safe climate limits, we can't burn all the oil and gas in fields that are already licensed, let alone go after even more. However, in focusing on reforming the UK climate compatibility checkpoint, the Scottish Government fails to acknowledge this reality. The Scottish Government should use the ESJTP to state its support for a clear end date for fossil fuel extraction within this decade, and align policy on energy production and use with this objective.

The final ESJTP must include a clear position of no support for the production of *any* fossil fuels, including oil and gas extraction. It is welcome that the draft ESJTP includes a presumption against both conventional and unconventional (fracking) onshore oil and gas extraction, which are within devolved powers, as well as coal.

In relation to offshore oil and gas extraction, the Scottish Government must take a position against and work to oppose any new oil and gas exploration licensing (including the current and any planned future offshore licensing rounds) or development and production permitting by the UK Government (including the Cambo and Rosebank fields). While powers over offshore extraction remain reserved, taking this position can influence at the UK level and show world leadership beyond. The Scottish Government must also cease to support such activity through any devolved means such as funding, Crown Estate licensing and planning.

Furthermore, the Scottish Government must use the many devolved powers at its disposal to shift energy generation and equivalent energy consumption to as close to fully renewable within the same timeframe.

The draft ESJTP includes two very different and incompatible ambitions for Scotland's future energy demand at the start of chapter 4: at least the equivalent of 50% of energy use to come from renewables by 2030, and; energy use to be 'largely decarbonised' by 2030'. The Scottish Government's own analysis has shown that the latter ambition is not possible through relying on negative emissions technologies such as CCS and blue hydrogen. Such technologies are demonstrably incapable of contributing to emissions reductions over the next decade, and serve only to prolong the life of the fossil fuel industry and distract from the real solutions to the climate crisis.

The ambition of largely decarbonised energy use by 2030 is welcome and necessary; the only way to achieve it is by moving to a fully renewable system, and the ESJTP must bring forward a coherent routemap for doing so. In this context the ongoing presumption against new nuclear power is welcome. New fossil fuel infrastructure that would lock in our dependence beyond even our 2045 targets such as the proposed new gas fired power station at Peterhead clearly must also be ruled out.

- **Demand management for tackling inequality and a global just transition**

Demand management must be central to the final ESJTP in order to meet the ambition of 2030 targets. Key demand management measures such as mass home energy insulation roll out, road traffic reduction and investment in the expansion of an affordable, well

connected public transport system are central to this. Designed correctly, such initiatives will also tackle the root causes of the cost of living crisis and inequality in Scotland.

Our privatised energy system has patently failed to deliver solutions to both environmental and social problems. Public ownership enables the prioritisation of objectives beyond profit and therefore is key to the transformation of our energy system. A publicly owned energy company and expansion of local and community owned energy would help drive both increased renewable energy generation and energy efficiency (as well as employment focussed just transition objectives) and must be embedded in the final ESJTP.

Demand management must also be understood and framed within the context of global justice and equity, and wider planetary limits. Different decarbonisation paths have different implications for material demand, with policies focused on energy demand reduction and public services over private ones offering the greatest potential for savings. Mining for minerals critical to the energy transition is already causing widespread human rights abuses, social harm and environmental damage; on current trajectories this is set to increase as demand for lithium, cobalt, copper and other minerals rockets to meet the enormous energy demands of global North countries in transition.

While the harmful impacts of mining can be reduced they cannot entirely be eradicated; at the same time the principles of a *global* just transition require the provision of clean, reliable energy access to the millions worldwide currently without. Therefore, reducing our overall energy demand and setting appropriate generation targets will be key to meeting our climate obligations as part of a global just transition, and the ESJTP must take account of the whole life cycles of our energy infrastructure, and the principles of the circular economy, resource justice and sustainable material consumption.

- **Just transition planning**

According to the Scottish Government's own guidance, a Just Transition Plan for the energy sector should outline how it will reduce its greenhouse gas emissions in line with Scotland's climate change targets and deliver the Just Transition Outcomes which include more jobs, better jobs, supporting communities most at risk and 'affordable energy that reduces poverty and furthers equity'.

By these standards the current draft ESJTP fails to deliver. While the draft talks about green jobs and supporting workers through a just energy transition, there is very little in the way of specifying how or how many jobs will be created, in which sectors and how the Government will ensure they are secure and well-paid, or of measures to help workers through the transition. Nor does it set out how the necessary investment in the transition will be secured.

The final ESJTP must show how the principles of just transition will be put into practice in supporting workers and communities most affected by the move away from oil and gas. It must also show how policies to decarbonise the energy sector will ensure widespread benefits of the transitions go to communities rather than private companies, and contribute to reducing poverty and furthering equity.

Chapter 1 – Introduction and Vision

1. What are your views on the vision set out for 2030 and 2045? Are there any changes you think should be made?

Friends of the Earth Scotland broadly supports the topline vision outlined by the Scottish Government at the start of chapter 1 that “*Scotland will have a flourishing, climate friendly energy system that delivers affordable, resilient and clean energy supplies for Scotland’s households, communities and business.*” However, as detailed in our introductory comments, and our response to subsequent questions, we are of the view that the policies outlined throughout the ESJTP and other Scottish Government strategies and plans are insufficient to deliver it.

Furthermore, we are concerned with the emphasis on delivering “*maximum benefit to Scotland*”, absent of any recognition of the needs of a global just transition, which will require consideration of our overall energy demand, and generation for export ambitions, and the way in which we meet them. We note and support the Just Transition Commission’s call for a strategic priority of “do no harm” as part of Scotland’s national just transition strategy, to “ensure that objectives are not met by transferring carbon emissions, exploitation, human rights abuses or economic precarity to other Jurisdictions”.² The vision should be rearticulated to take account of this, and policies adapted accordingly.

As noted in our introductory comments, the vision includes two very different and incompatible ambitions for Scotland’s future energy demand, as set out at the start of chapter 4: at least the equivalent of 50% of energy use to come from renewables by 2030, and; energy use to be ‘largely decarbonised’ by 2030’. The Scottish Government’s own analysis has shown that the latter ambition is not possible through relying on negative emissions technologies (NETs) such as CCS and blue hydrogen. We go into more detail on these points in answer to subsequent questions. The ambition of largely decarbonised energy use by 2030 is a welcome and necessary bringing forward of the 2050 target date in the previous energy strategy. Given the limitations of NETs the only way to achieve it is by moving to a fully renewable system, therefore the vision, and policies to implement it, should be adjusted accordingly.

Chapter 2 – Preparing for a Just Energy Transition

2. What more can be done to deliver benefits from the transition to net zero for households and businesses across Scotland?

Public ownership for public good

As noted in our opening comments, our privatised energy system has patently failed to deliver solutions to both environmental and social problems. Public ownership enables the prioritisation of objectives other than profit and therefore is key to the transformation of our

² Just Transition Commission 2 Initial Report '[Making the Future](#)', p28-30 International Dimensions

energy system. While we agree that a retail based public energy company is not the right approach, it is unclear why the Scottish Government considers that a public energy company involved in major generation projects would only be possible in an independent Scotland. A publicly owned energy company with targeted objectives and the expansion of local and community owned energy would help drive increased renewable energy generation, energy efficiency and job creation.

New publicly owned energy companies with a remit to co-invest into and develop new clean energy generation and grow shorter supply chains and industrial capacity should be central to the ESJTP. For larger scale projects, companies can initially begin life as a minority co-investor with private sector partners, to accumulate experience, skills and capacity. Offshore wind and tidal stream should be a priority for such investment.

The Scottish Government should also take ownership stakes in privately owned ports and strategic maritime support infrastructure, where current owners are failing to upgrade or invest in line with the needs of the climate transition. By assessing existing ports and fabrication yards capable of renewable manufacturing, providing funding in return for an equity stake or bringing them into public control and providing guarantees of jobs in manufacturing, the Scottish Government will be able to ensure that communities with existing infrastructure will be able to take full advantage of the Just Transition.

Local authorities should be encouraged and supported to set up local and / or regional public energy companies, investing and building new renewable generation within and beyond their local geography.

No community left behind

Local authorities, with funding and policy backing from the UK and Scottish Governments, need to develop regional diversification programmes at the right scale to substitute the economic contribution of the oil and gas industry. This is likely to involve the following elements:

- Contribute to diversifying and retooling for supply chain businesses currently dependent on the oil and gas industry;
- Set up and scale up innovation hubs in new industries (e.g. tidal power, floating offshore wind) in partnership with universities;
- Improve public transport links and active travel infrastructure;
- Invest in local Higher and Further Education institutions to train people up in emerging industries and those with skills shortages;
- Keeps wealth in local circulation, including by supporting local businesses to shorten their supply chains by procuring goods and services locally;
- Incorporate democratic accountability mechanisms such as participatory budgeting.

To support local authority regional diversification programmes, the Scottish Government should create funding streams, allocated on the terms set out above, including through the Scottish National Investment Bank and expanding the Just Transition Fund. It should also use its Community Wealth Building Bill (due before the Scottish Parliament in 2023)³ to

³ <https://www.gov.scot/policies/cities-regions/community-wealth-building/>

require CWB approaches to be integrated in infrastructure spending, and to expand Scottish Government support for Local Authority implementation of CWB approaches.

Local authorities should create regional diversification programmes, particularly in oil and gas industry hubs, with the aim of substituting the local economic contribution of the fossil fuel industry. These programmes should be designed and governed with genuine accountability to local communities and impacted workers. They must also implement community wealth building strategies, adjusting procurement rules, pension investments, business support schemes, and land management practices in order to maximise the local recirculation of wealth. Funding could be raised through issuing bonds or attracting pension fund investment.

'Public ownership for public good' and 'no community left behind' are two of ten key demands identified through an in-depth consultation process with offshore workers to map out a blueprint for a Just Transition, which won the support of over 1,000 offshore workers surveyed. This part of our response draws heavily on the research carried out to develop policies and pathways to realise these demands. For more information to support the case for public ownership and regional diversification in driving the Just Transition, and how they can be progressed under current devolved powers, including on costs, please see our report 'Our Power: Offshore Workers Demands for a Just Energy Transition'.⁴

3. How can we ensure our approach to supporting community energy is inclusive and that the benefits flow to communities across Scotland?

The draft ESJTP restates the Scottish Government goal of 2GW of community and locally owned energy by 2030, with no goal set for 2045. 2GW is a small fraction of Scotland's energy production, yet the metrics outlined in the ESJTP state that of the <1GW of energy currently designated as "community and locally owned" only 10% is actually community owned. Clearly a step change is needed to ensure that community ownership and the benefits that flow from it are properly established in Scotland.

Separating out the target into its component parts and prioritising community owned and local authority owned renewables would help give the right focus to policies to deliver the targets. For the former, the focus should be on communities as partners or leaders in the processes of change and development rather than passive beneficiaries. Such community ownership can drive forward local energy transitions in an inclusive way if existing barriers are addressed and greater support provided, particularly for low income communities.

Tackling regulatory and financial barriers to community ownership, including through support for individuals and communities to navigate these, should be prioritised. Although not mentioned in the draft ESJTP, there is an obvious synergy with Community Wealth Building since the reason for locally rooted finance is to ensure returns on investments recycled back

⁴ Full report: <https://foe.scot/wp-content/uploads/2023/03/Our-Power-Report.pdf> Briefing on Demand 8: Public Ownership for Public Good <https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-8-Our-Power-FINAL.pdf> and Briefing on Demand 10: No Community Left Behind <https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-10-Our-Power-FINAL.pdf>

into the local economy, rather than returns heading offshore. As noted above, the Scottish Government should use its Community Wealth Building Bill (due before the Scottish Parliament in 2023)⁵ to require CWB approaches to be integrated in infrastructure spending, and to expand Scottish Government support for Local Authority implementation of CWB approaches.

4. What barriers, if any, do you/your organisation experience in accessing finance to deliver net zero compatible investments?

n/a

5. What barriers, if any, can you foresee that would prevent you/your business/organisation from making the changes set out in this Strategy?

n/a

6. Where do you see the greatest market and supply chain opportunities from the energy transition, both domestically and on an international scale, and how can the Scottish Government best support these?

The development of high quality jobs in the supply chain for renewable energy production is essential for achieving a just transition for workers in the industrial sectors currently reliant on fossil fuels. The draft ESJTP frequently talks about 'boosting our domestic supply chain' but fails to set out how they will be secured.

Some of the greatest market and supply chain opportunities from the energy transition are in renewables manufacturing, steel recycling, oil and gas and wind turbine decommissioning and fair and sustainable supply of transition materials. Across these, and all opportunities emerging across the energy transition, the Scottish Government must set out a plan for how jobs will be secured, otherwise, as the experience of the last 10 years and more clearly shows, they will not simply materialise on their own. Additionally, measures to support the development of supply chains must adopt a circular economy approach from the earliest opportunity. We set out in more detail below how these opportunities could be harnessed in such a way that maximises just transition benefits and minimises environmental and social harm.

Renewables manufacturing and construction

To date, job creation from renewable energy production has fallen far short of promises.⁶ Manufacturing jobs in particular have not materialised, with key components including wind turbine foundations, towers, nacelles and sub-stations imported from other countries.

⁵ <https://www.gov.scot/policies/cities-regions/community-wealth-building/>

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https://stuc.org.uk/files/Policy/Reasearch_Briefings/Broken%20promises%20and%20offshored%20job%20report.pdf and https://www.owic.org.uk/_files/ugd/1c0521_a7d1955f12f04b1f8d777568ac93cf47.pdf

A thriving renewables supply chain can open up the jobs needed for the transition by re-industrialising the UK, retooling the oil and gas supply chain creating new opportunities for workers and retaining economic benefits from growing industries. Greater investment into ports and manufacturing hubs alongside stronger local content rules attached to licences and government contracts can enable renewables infrastructure to be manufactured in Scotland, and where possible reuse the steel from decommissioned oil and gas rigs. Investing in domestic renewables manufacturing and fabrication would revitalise yards and reduce the carbon footprint of shipping materials and offshored manufacturing emissions.

Part of the problem is the private ownership of ports, unlike many European countries which hold significant public stakes in their ports. Decades of underinvestment by private owners mean that Scottish (and UK) ports are not up to a standard where they can compete internationally, that there are few domestic manufacturing companies engaged in the offshore wind supply chain, and that international manufacturers are hesitant to locate here. Many coastal regions don't have enough capacity to deliver on multiple offshore wind installation projects simultaneously.⁷ Few ports have yards large enough to deliver on the volume of fabrication required. This is part of the reason for the failure of domestic businesses like BiFab in Fife to win significant manufacturing contracts for foundations, with these shipped around the world instead.⁸

Despite the large offshore wind project pipeline in Scotland, there is not a single major 'hub' port in Scotland providing co-located assembly and fabrication on a scale comparable to the facilities that have been developed in the past 10 years in Denmark, the Netherlands or Germany, where there is much more public ownership of and investment into ports.⁹

The UK Government's free ports agenda was developed partly because of the past failure to grow jobs and activity in the renewable supply chain. But an approach that exempts ports from existing protections will weaken workers rights and jobs quality, undermine environmental protections and reduce community benefits.¹⁰ The "free" element of this programme is forecast to suck in economic activity that already exists or would have been created elsewhere, instead of boosting investment or creating new jobs to the UK.¹¹ It should go without saying that a just transition in one region (or country) at the expense of another is not a just transition.

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<https://www.energyvoice.com/renewables-energy-transition/wind/uk-wind/316666/bottlenecks-at-scottish-ports-could-hamper-offshore-wind-developments-warns-industry-leader/>

⁸ <https://committees.parliament.uk/oralevidence/2289/pdf/>

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<https://www.crownstatescotland.com/news/new-research-on-net-zero-opportunities-for-scotlands-ports>

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<https://www.unitetheunion.org/what-we-do/unite-in-your-sector/docks-rail-ferries-and-waterways/freeports/>

<https://www.tuc.org.uk/blogs/brexit-why-free-ports-are-race-bottom-workers-rights>

¹¹ UKTPO (2019) 'What is the extra mileage in the reintroduction of free zones in the UK', available at: <https://blogs.sussex.ac.uk/uktpo/publications/what-is-the-extra-mileage-in-the-reintroduction-of-free-zones-in-the-uk>

Helgadottir, Oddny (2020) 'Freeports: Johnson should look elsewhere for growth enhancements', Social Europe, available at:

<https://www.socialeurope.eu/freeports-johnson-should-look-elsewhere-for-growth-enhancements>

The Scottish Government's Green Port proposal adds additional priorities including:

- adopting a fair work approach, which includes payment of the real Living Wage
- adopting the Scottish Business Pledge
- committing to supporting sustainable and inclusive growth in local communities
- contributing to Scotland's just transition to net zero

However, it is unclear as to whether these priorities will be legally binding in Scotland, nor what is meant in any substantive way by the latter two.

Scotland's efforts to promote local supply chain creation so far also have little capacity to compel the creation of local content, and there are no conditions placed on licensing rounds (e.g. ScotWind) to guarantee local job creation. Despite all of this, given the scale of the renewables pipeline, there are still significant opportunities to be harnessed in renewables manufacturing and construction jobs.

Based on current activities, limitations on contracts, potential for expansion and improvement in port facilities, location in relation to offshore wind licences and forecast licences where a substantial amount of work will be needed, there are potential offshore wind construction and manufacturing hubs in North East Scotland (including Aberdeen, the Cromarty Firth and the Inner Moray Firth), North West Scotland (Arnish and Kishorn), Forth and Tay (including Methil, Dundee, Rosyth and Leith)¹².

To improve baseline port infrastructure to be able to support growth of jobs in offshore wind construction and manufacturing, the Scottish Government should:

- Clarify that to achieve its existing core mission of supporting "the just transition to net zero emissions by 2045"¹³, the Scottish National Investment Bank can use an active ownership approach towards companies in which it has invested, to encourage greater domestic procurement and more local supply chains.
- Direct the Scottish National Investment Bank to build on its investment into the expansion of Aberdeen Harbour¹⁴ by investing into and taking equity stakes in more Scottish ports. These should prioritise brownfield sites and incorporate community demands for siting.
- Expand the scale of the Scottish National Investment Bank, enabling it to make more and larger investments into transition infrastructure.

To boost domestic manufacturing and support existing oil and gas supply chains to retool the Scottish Government should:

- Use the Scottish National Investment Bank to build on UK investment schemes supporting offshore wind manufacturing and retooling, with additional Scottish support schemes.

¹² Belfast is currently the only port in Ireland suitable to support the construction of offshore wind farms.

<https://www.irishexaminer.com/news/arid-40896056.html>

¹³ <https://www.gov.scot/news/core-missions-for-investment-bank/>

¹⁴ <https://www.thebank.scot/portfolio/port-of-aberdeen/>

- Create public stakes in manufacturing (i.e. rather than providing grants to businesses, invest and take equity stakes in manufacturing sites). Maintaining active equity stakes can ensure that job quality remains high and procurement is supporting further local content from supplier industries.

Additionally, the Scottish Government must include conditionality in licensing rounds (administered by the Crown Estate and Crown Estate Scotland), to boost investment into domestic supply chains by making licences conditional on creation of local supply chain jobs.

'Invest in domestic manufacturing and assembly for renewables' is one of ten key demands identified through an in-depth consultation process with offshore workers to map out a blueprint for a Just Transition, which won the support of over 1,000 offshore workers surveyed. This part of our response draws heavily on the research carried out to develop policies and pathways to realise this demand. For more information to support the case for investing in domestic manufacturing and assembly for renewables in driving the Just Transition, and how it can be progressed under current devolved powers, including on costs, please see our report 'Our Power: Offshore Workers Demands for a Just Energy Transition'.¹⁵

Steel recycling and production

The ESJTP states that Scotland's potential offshore wind capacity in the pipeline is 38 GW (Figure 15). Each MW of offshore wind requires, on average, 190 tonnes of steel to build, so 38GW would require over 7.2 Mt of steel to build. The huge amount of steel, additional to current demand, required to deliver this means that securing a sustainable and just supply of this material is vital. Currently, Scotland is almost completely reliant on imports for the millions of tonnes of steel used each year (Scotland has produced less than 6000 tons of crude steel per year in the last three years¹⁶), while all of Scotland's scrap steel is exported.

We commissioned new research which maps the supply of steel used in Scotland's wind turbines¹⁷. The research found that this steel is supplied from a complex, international web of extraction, manufacturing and trade. The iron ore extracted to make steel used in Scotland will likely largely come from Australia and Brazil, two of the largest producers of iron ore globally. There are well documented and serious social and environmental impacts associated with iron ore extraction and steel production, including human rights abuses. In Brazil, two major dam failures from iron ore extraction sites within four years of each other have resulted in "immeasurable" damage, including the deaths of hundreds of people.¹⁸

Whilst some Scottish steel will be recycled in electric arc furnaces (EAF) abroad, a more circular solution would be to keep our scrap steel in Scotland and process it here. Unlike processing steel from new material, recycling high-quality scrap steel can be processed in

¹⁵ Full report: <https://foe.scot/wp-content/uploads/2023/03/Our-Power-Report.pdf> Briefing on Demand 4: Invest in domestic manufacturing and assembly for renewables https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-4-Our-Power_-FINAL.pdf

¹⁶ Hall (2020) [Scottish steel sector analysis](#)

¹⁷ Friends of the Earth Scotlands Transition Minerals report <https://foe.scot/wp-content/uploads/2023/05/DRAFT-Unearthing-Injustice-report.pdf>

¹⁸ Cristiane dos Santos Vergilio et al, Metal concentrations and biological effects from one of the largest mining disasters in the world (Brumadinho, Minas Gerais, Brazil), Nature, 2020, <https://doi.org/10.1038/s41598-020-62700-w>

EAFs without hydrogen. An EAF in Scotland has the potential to reduce our GHG emissions by 60% compared to the way scrap steel is currently managed¹⁹. Such a plant could create 180 direct jobs and 1,000 indirect jobs.²⁰ As renewable generation grows and fossil fuel production declines, the greening of the electricity grid has the potential to reduce the carbon impact of EAF further still.

With a circular economy approach, scrap steel from decommissioned oil and gas rigs, wind turbines and other sources would be brought to domestic ports for disassembly. At the same location, scrap would be processed in an EAF supplied by grid electricity. Once the steel was melted, it would be recast, in a continuous casting process, into the products required for wind turbine fabrication. Assembly would be in yards across Scotland, enabling the creation of new, skilled jobs in the green economy across decommissioning, steel and wind power sectors with significant opportunities for transferability of the existing skills and experience of workers in the fossil fuel industry.

To support the development of a sustainable steel sector in Scotland as part of the energy transition, the Scottish Government should reconvene the Scottish Steel Sector Roundtable and task them with urgently creating a sustainable steel strategy for Scotland. The strategy should be guided by principles of global and domestic just transition, prioritise retaining the materials and skills required for the energy transition in Scotland, and creating decent green jobs, and aim to secure the development of an EAF in Scotland. It should be developed in consultation with key stakeholders (prioritising steel and decommissioning experts, workers and their trade unions), and set out how workers with transferable skills from high-carbon industries will be supported to move into this area. This aim and the key actions to realise it should be embedded in the ESJTP.

Wind turbine decommissioning

As the wind sector grows, so too will the need for decommissioning of turbines as they come to the end of life. Around 5,500 turbines will be decommissioned in Scotland by 2050, representing nearly 1.5 Mt of materials. As described in Zero Waste Scotland's report on onshore wind turbine decommissioning²¹, this can be done in a circular way, if planned for properly. Planning for wind turbines decommissioning should start now, and be included in the ESJTP. As with all such plans, engagement with key stakeholders including workers and Trade Union representatives, affected communities and environmental stakeholders, is key.

The practicalities of using an Extended Producer Responsibility (EPR) scheme for wind turbines should also be considered as a way of ensuring developers take on the responsibility and financial costs of decommissioning. EPRs encourage more sustainable use of materials as moving the cost to producers incentivises them to reduce and recycle materials.

The UK Government's main mechanism for supporting low-carbon electricity generation, known as the Contracts for Difference (CfD) scheme, currently only considers the cost of projects. This could be amended so that CfD (or its successor) also includes an assessment of whole life carbon impacts as well. While this is a reserved matter, the Scottish

¹⁹ ZWS (2021) [How should Scotland manage its scrap steel?](#)

²⁰ ZWS (2023) <https://www.zerowastescotland.org.uk/resources/future-work>

²¹ ZWS (2022) [The future of onshore wind decommissioning in Scotland](#)

Government is well placed to influence the design of CfD, given the importance of Scottish projects to the overall UK renewables sector.

Conditions for decommissioning are set as part of an initial leasing agreement with the UK Government. The tendering process should require operators to find alternatives to landfill and incineration, and the Scottish Government should seek to influence this. While voluntary standards have a history of failing to deliver, Vattenfall's self imposed target to achieve a 50% recycling rate of wind turbine blades by 2025, and 100% by 2030 suggests the industry considers this is achievable.²²

Furthermore, there may be synergies between wind turbine and oil and gas decommissioning which could be optimised by the delivery of parallel plans by the Scottish Government.

Fair and sustainable supply of transition materials

Transition materials (sometimes known as critical minerals), such as lithium, copper, cobalt, and nickel, are material resources which are essential to modern economies and the energy transition in particular. Many of them are used in energy related technologies, including batteries of electric vehicles and the motors of wind turbines making them vital to creating a low carbon future. In 2021, the UK Government published its first ever Critical Mineral Strategy²³, which included a list of 18 materials which are considered to be the most critical to the UK's future. Many of the materials which are vital to Scotland's Energy Strategy are on this list, such as lithium, vanadium and rare earth elements.

Demand for transition minerals is growing rapidly across the world. Like all materials used in Scotland's economy, primary supply of transition minerals are mined from the natural environment. Mining is associated with conflict because mineral resources are located in a fixed place, which means any existing communities face disruption. Mining is an extremely energy intensive process and most operations rely on fossil fuel based energy sources. Mining generates large amounts of waste, which is often toxic, and usually stored permanently in tailing dams, which have seen a number of tragic failures.

Governments and mining companies the world over are not meeting their minimum internationally recognised responsibilities to protect human life and the environment. This is causing widespread human rights abuses, social harm and environmental damage which is pushing planetary boundaries to breaking point.

While the impacts of mining can and should be minimised, they cannot be eliminated. Mining will always carry the risk of significant social and environmental impact. This means reducing demand will always be essential to reducing the impacts of mining.

Different decarbonisation pathways, and generation / export ambitions have very different implications for material demand, with policies focused on material demand reduction and public services over private ones offering the potential for greater savings. For example, displacing cars with buses could significantly reduce Scotland's demand for lithium. Replacing Scotland's 2.5 million fossil fuel cars and 4,400 buses, like for like, would require

²² ZWS (2022) [End of life material mapping for offshore wind in Scotland](#) page 15

²³ UK Government (2021) [UK Critical Mineral Strategy](#)

20,200 tonnes of lithium in total. If the proportion of journeys in Scotland taken by bus increased to 30%, lithium requirements would be 13,800 tonnes (32% less).

The draft ESJTP does not consider the material demand created by its proposed policies, such as increasing wind capacity dramatically and the extensive material demands of hydrogen production, including for export. Policy makers need to understand the material requirements associated with Scotland's huge potential wind capacity in order to make informed choices about the most sustainable and just energy systems. The Scottish Government must also coordinate with the UK and European governments to create the required capacity in the most efficient way.

The Scottish Government must create a resource justice strategy for Scotland, which includes within it a plan for fair and sustainable consumption of transition minerals. It should include specific requirements to ensure Scotland's consumption of transition minerals is sustainable and just as the energy transition progresses.

The resource justice strategy should be based on five key pillars:

1. Commitment to a globally just material transition
2. Consumption reduction targets
3. Demand reduction policies
4. Clear and transparent data
5. Fair and collaborative policy process

As noted in our response to Q1, the Just Transition Commission has called for a strategic priority of "do no harm" as part of Scotland's national just transition strategy, to "ensure that objectives are not met by transferring carbon emissions, exploitation, human rights abuses or economic precarity to other Jurisdictions".²⁴ The vision and ambition of the ESJTP should be rearticulated to take account of this, and policies adapted to deliver it, including a commitment to a resource justice strategy for Scotland.

7. What more can be done to support the development of sustainable, high quality and local jobs opportunities across the breadth of Scotland as part of the energy transition?

A Just Transition Delivery Plan

The ESJTP needs to set out a high level delivery plan, with actions, timelines and milestones for every ambition set out. Where government action alone will not be sufficient the necessary role of other sectors has to be spelled out. While the Just Transition Outcomes in Annex F are desirable there is no accompanying action plan for any of them. This must be addressed in the final draft.

Scale and sources of investment

The draft ESJTP expresses the importance of investment for achieving the changes needed, however the only sections which attempt to address the questions of how much is needed and by when are wholly inadequate. The Scottish Government's investment plan of almost

²⁴ Just Transition Commission 2 Initial Report '[Making the Future](#)', p28-30 International Dimensions

£5bn over this parliament is highlighted along with a list of energy sector funding and finance at Annex 1. While there is no analysis of the scale of investment needed to demonstrate that these will be sufficient, set against, for example, CommonWeal's estimate of £170bn for the energy transition, the sum of £5bn is clearly woefully insufficient. Much larger flows of investment from both public and private sectors will be needed over both this parliament and the next decade. The ESJTP should include fiscal projections on the one hand and plans to both incentivise and require private investment in the enterprise-level investments needed to transform every sector to achieve emissions reductions targets.

Workers at the centre of transition planning, clear accessible pathways out of high carbon jobs and reforming the training system

Workers know what barriers exist to the phase out of oil and gas and the potential solutions for building a thriving renewables industry. Any transition needs to be shaped by that knowledge. This requires engaging a representative section of the workforce in participatory policy-making, where workers are able to influence and determine policy, in addition to existing engagement with trade unions.

A successful transition needs to make use of skills already within the workforce, and give people the chance to take up new opportunities. Among other measures this requires understanding the skills and experience held by existing workforces, how they align with the skills we need in the future, funding for training and retraining, and a jobs guarantee for all workers leaving the offshore oil and gas industry as it declines.

Training in the energy industry is effectively a racket, despite the often dangerous work involved. OPITO, GWO and the other standards bodies need to align their training standards so workers aren't paying the price to transition. On top of an Offshore Training Passport, an overhaul of the system is needed, with training designed around workers, skills and industry needs, rather than the convenience of training providers or accrediting bodies. A properly regulated, central coordination of training is required, where transferable skills are recognised, rather than profit-motivated industry and training bodies setting the standards.

The ESJTP must address this need for workforce planning. Littering phrases such as 'boosting skills', equipping workers with 'the skills and opportunities to access good, green jobs' and 'using our existing skills base' throughout the current draft does not add up to workforce planning. The workforce should not be left to navigate the transition on its own; a clear offer to the workers most affected by energy transition is essential.

To ensure workers are at the heart of transition planning the Scottish Government should:

- Establish the Just Transition Commission by statute for the duration of domestic climate targets, ensuring it is independent of government and with a responsibility to report to the Scottish Parliament directly. A majority of the members of the Commission should represent key stakeholders in a just transition - i.e affected workers and communities, trade unions and the environment.
- Encourage local authorities to convene their own Just Transition Commissions and participatory policy-making processes.
- Ensure that all funding for companies, and contracts and procurement where relevant, should be conditional on companies having involved their workforce in

transition planning, with employers working with trade unions to convene participatory processes for a representative section of the workforce. The results of these planning processes should be formalised as collective agreements with unions in the workplace, and regularly updated.

To support the creation of clear, accessible pathways out of high carbon jobs the Scottish Government should:

- Conduct and regularly update analysis, through Skills Development Scotland (SDS), forecasting long term trends in skills demand in the context of the climate transition.
- Review and expand funding available to FE colleges to develop courses covering emerging skills gaps and shortages for the climate transition in line with this long-term assessment.
- Launch a targeted retraining funding initiative for oil and gas workers, available to all workers regardless of their employment status, with fasttrack support available to those under threat of redundancy. Employers who want to participate should be required to demonstrate that they are supporting jobs with pay and conditions in line with national collective agreements (or Fair Work where those agreements don't exist). Courses and qualifications should include RPL processes.
- Through the Green Jobs Workforce Academy or SDS , provide tailored advice to oil and gas workers that takes into account their experience without 'going back to the start'.
- Trial and institute a paid time off to train support scheme specifically for fossil fuel workers, or more broadly for workers in sectors shrinking due to major technological change.

To support a training regime built to keep workers safe rather than for profit, the Scottish Government should:

- Use its role on the Energy Skills Alliance to steer the offshore passporting scheme to a model which:
 - Eliminates duplication of qualifications, ensuring that certification (including 'micro-certification') with one body is fully recognised by the other(s) and no duplication of training or assessment is needed including recognition of prior certificated learning (RPCL).
 - Provides proportionate, efficient and robust individual assessment and recognition of competence for experienced workers so that they do not have to attend training in areas where they are already proficient but lack certification (recognition of prior experiential learning, RPEL).
 - Guarantees that training is up-to-date, while ensuring that no worker has to redo a course that is still in date.
 - Is digital, so that the training and certification record of workers can easily be checked.
 - Is accepted as the minimum standard required by industry operators.
- Offer offshore workers in Scotland training support to meet the requirements of the Offshore Passport if needed for transitioning from oil and gas to other offshore industries (or prior to its setup, to meet existing training requirements for oil and gas workers seeking to work in renewables). This would form part of its commitment to a

Skills Guarantee to workers in carbon-intensive industries²⁵. Funding should be open to self-employed and off-payroll workers and cover wages lost as well as training costs. This should be part-funded by the new transition skills levy.

- Establish a programme under the Green Jobs Workforce Academy to support individual workers to access training pathways that suit them, alongside a programme to support workers from underrepresented groups or backgrounds to access opportunities within the offshore energy sector.
- Support Scottish Further Education colleges in receiving industry body accreditation for delivering Offshore Training Passport aligned courses and carrying out RPEL assessments.

This part of our response draws heavily on 3 of ten key demands identified through an in-depth consultation process with offshore workers to map out a blueprint for a Just Transition, which won the support of over 1,000 offshore workers surveyed. For more information to support the case for 'Workers at the centre of transition planning'; 'Create clear, accessible pathways out of high carbon jobs'; and 'A training regime built to keep workers safe rather than for profit' in driving the Just Transition, and how they can be progressed under current devolved powers, including on costs, please see our report 'Our Power: Offshore Workers Demands for a Just Energy Transition'.²⁶

8. What further advice or support is required to help individuals of all ages and, in particular, individuals who are currently under-represented in the industry enter into or progress in green energy jobs?

n/a

Chapter 3 – Energy supply

Scaling up renewable energy

9. Should the Scottish Government set an increased ambition for offshore wind deployment in Scotland by 2030? If so, what level should the ambition be set at? Please explain your views.

See Answer 12.

10. Should the Scottish Government set an ambition for offshore wind

²⁵ <https://www.gov.scot/publications/scotlands-national-strategy-economic-transformation/pages/7/>

²⁶ Full report: <https://foe.scot/wp-content/uploads/2023/03/Our-Power-Report.pdf>; Demand 1: Workers at the centre of transition planning https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-1-Our-Power_FINAL.pdf; Demand 2: Create clear, accessible pathways out of high carbon jobs https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-2-Our-Power_FINAL.pdf; Demand 3: A training regime built to keep workers safe rather than for profit https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-3-Our-Power_FINAL.pdf

deployment in Scotland by 2045? If so, what level should the ambition be set at? Please explain your views.

See Answer 12.

11. Should the Scottish Government set an ambition for marine energy and, if so, what would be an appropriate ambition? Please explain your views.

We do not take a view on a specific GW-based goal for offshore wind, onshore wind, marine or solar energy. Rather, we are of the view that the ambition to grow our renewable energy industries must be guided by the requirement to meet our domestic climate targets and energy needs *and* the context of global justice and equity, and wider planetary limits. This will require consideration of our overall energy demand, and ambition for generation / export and the way in which we meet these.

Different decarbonisation paths and generation / export ambitions have different implications for material demand, with policies focused on energy demand reduction and public services over private ones offering the potential for greater savings.

As highlighted in response to Q6, mining for minerals critical to the energy transition is already causing widespread human rights abuses, social harm and environmental damage; on current trajectories this is set to increase as demand for lithium, cobalt, copper and other minerals rockets to meet the enormous energy demands of global North countries in transition.

While the harmful impacts of mining can be reduced they cannot entirely be eradicated; at the same time the principles of a *global* just transition require the provision of clean, reliable energy access to the millions worldwide currently without. Therefore, reducing our overall energy demand, and aligning any generation / export ambitions with these principles will be key to meeting climate targets as part of a global just transition. The ESJTP must take account of the whole life cycles of our energy infrastructure, and the principles of the circular economy, resource justice and sustainable material consumption.

We note again the Just Transition Commission's call for a strategic priority of "do no harm" as part of Scotland's national just transition strategy, to "ensure that objectives are not met by transferring carbon emissions, exploitation, human rights abuses or economic precarity to other Jurisdictions".²⁷ Ambitions for energy demand and generation / export should be reconsidered to take account of this, and policies adapted accordingly.

12. What should be the priority actions for the Scottish Government and its agencies to build on the achievements to date of Scotland's wave and tidal energy sector?

The Scottish Government should invest, and encourage investment, in increased research and development in the wave and tidal energy sector. The Scottish Government should

²⁷ Just Transition Commission 2 Initial Report '[Making the Future](#)', p28-30 International Dimensions

divert any and all funding and subsidies they can from fossil fuel based projects and industries into supporting all renewables, including wave and tidal; this is discussed further in Question 18. The Scottish Government must undertake extensive strategic planning to identify the potential scale, and appropriate locations for such developments.

13. Do you agree the Scottish Government should set an ambition for solar deployment in Scotland? If so, what form should the ambition take, and what level should it be set at? Please explain your views.

Yes. We do not take a view on a specific GW-based goal for offshore wind, onshore wind, marine or solar energy. Rather, we are of the view that the ambition to grow our renewable energy industries must be guided by the requirement to meet our domestic climate targets and energy needs *and* the context of global justice and equity, and wider planetary limits. This will require consideration of our overall energy demand, and ambition for generation / export and the way in which we meet these.

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14. In line with the growth ambitions set out in this Strategy, how can all the renewable energy sectors above maximise the economic and social benefits flowing to local communities?

See our answers to questions in response to Chapter 2.

²⁸ Just Transition Commission 2 Initial Report '[Making the Future](#)', p28-30 International Dimensions

15. Our ambition for at least 5 GW of hydrogen production by 2030 and 25 GW by 2045 in Scotland demonstrates the potential for this market. Given the rapid evolution of this sector, what steps should be taken to maximise delivery of this ambition?

We are sceptical about the role of hydrogen in Scotland's future energy system. A statement of ambition does not necessarily demonstrate potential for a given market²⁹, it simply demonstrates a desire on the part of the Scottish Government. We are of the view that the ambition to deliver on the 5GW and 25GW targets is unrealistic. Hydrogen for most sectors - including most methods of transportation, heating and as a by-product in power generation - is costly, inefficient and other more suitable options such as direct electrification exist. This is reflected in some sections of this draft of the ESJTP, for example, at p105, which notes;

“we do not consider that hydrogen will play a central role in the overall decarbonisation of domestic heat and therefore we cannot afford to delay action to decarbonise homes this decade through other available technologies”

We support this position although we note with concern that the ESJTP does go on to mention hydrogen blending. Hydrogen blending risks locking us into fossil fuel usage for decades to come. The Scottish Government should not support blending hydrogen into the gas grid and instead focus on retrofitting homes, energy efficiency, direct electrification and district heat pumps.

The ESJTP on a whole is not clear on what percentage of hydrogen would be produced using only renewable electricity and how much hydrogen would be produced using so-called 'low-carbon' or 'blue' hydrogen; that is hydrogen created using fossil fuels with emissions captured via CCS. This is a misleading classification that obfuscates the high residual and process emissions associated with blue hydrogen production. At present 98% of all hydrogen³⁰ production is from fossil fuels.

The attempt to re-brand high carbon fossil fuels as low-carbon or clean is not a new phenomenon. Before the phase out of coal production in Scotland, there was much enthusiasm both from industry³¹ and politically for “clean coal” i.e. coal power with CCS. In 2011 this culminated in the proposal that CCS could be developed at a new coal fired power plant at Hunterston and retrofitted into the power station at Longannet³². Neither of these projects went on to completion.

Today, after decades of public investment, subsidy and pilot projects in so-called “clean coal” there is only one single commercially operating facility in the world, The Boundary Dam station in Saskatchewan, Canada which had capital costs of approximately US\$455 million

²⁹

https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Sep/IRENA_Hydrogen_2019.pdf

³⁰ <https://foe.scot/wp-content/uploads/2022/06/Hydrogen-Report-Digital-2.pdf>

³¹ <https://www.sccs.org.uk/news-events/recent-news/135-canada-s-flagship-ccs-project-on-coal-will-create-ripples-worldwide>

³² <https://sequestration.mit.edu/tools/projects/longannet.html>

and a capture cost of US\$100 per tonne of CO₂³³. Despite industry enthusiasm the site started operation in 2014 and has captured a cumulative 3.4MtCO₂ up to July 2020. We calculate that this represents an average annual capture rate of just 560ktCO₂ at a cost of US\$56m. For comparison, Scotland's Longannet coal-fired power station released 9.5MtCO₂ in 2013; meaning a capture rate similar to that at the Boundary Dam would mean a huge amount of CO₂ was still being released. The term 'low-carbon' should not be used to describe hydrogen made from fossil fuels even if those fossil fuels run alongside CCS. Case studies, historic precedence and evidence show that there is no such thing as a 'low-carbon' fossil fuel.

Recent research³⁴ shows that while carbon dioxide emissions are lower from blue hydrogen than grey hydrogen (fossil hydrogen without CCS), methane emissions are higher because of an increased use of fossil gas to power the carbon capture. Methane emissions are 86 times more impactful than carbon dioxide³⁵. Further, the greenhouse gas (GHG) footprint of blue hydrogen is more than 20% greater than burning natural gas or coal for heat. Whilst the ESJTP makes note of the OEUK³⁶ Methane Action Plan in relation to North Sea oil production the Action Plan does not map out methane emission standards for blue hydrogen production. The ESJTP also does not set out, nor signpost to, clear policy or guidelines on how methane emissions from hydrogen projects in Scotland will be calculated.

The ESJTP should clarify what the definition of 'low-carbon' means. It should not include blue hydrogen, or green hydrogen made from biomass due to incredibly low efficiencies and enormous land footprint³⁷.

The ESJTP should make clear how much fossil hydrogen with CCS and how much renewable hydrogen will contribute to the 5GW and 25GW targets. At present, fossil hydrogen with CCS is being put into the same category as renewable hydrogen. This sets a dangerous precedent whereby projects that are not using renewable hydrogen potentially have access to funding and policy support to continue with the exploration and production of fossil fuels. There is a significant risk that pursuing blue hydrogen would see Scotland miss its climate targets.

The Scottish Government should provide a detailed framework for how methane emissions are calculated, accounted for and monitored in relation to hydrogen projects along with evidencing what methane emission standards, if any, are being used for blue hydrogen projects in Scotland.

16. What further government action is needed to drive the pace of renewable hydrogen development in Scotland?

³³ <https://foe.scot/wp-content/uploads/2021/01/CCS-Research-Summary-Briefing.pdf>

³⁴ <https://onlinelibrary.wiley.com/doi/full/10.1002/ese3.956>

³⁵ <https://www.carbonbrief.org/scientists-concerned-by-record-high-global-methane-emissions/#:~:text=Methane%20is%20a%20potent%20greenhouse,as%20powerful%20over%20100%20years>

³⁶ <https://oeuk.org.uk/product/methane-action-plan-2021/>

³⁷ <https://www.biofuelwatch.org.uk/wp-content/uploads/Hydrogen-and-bioenergy-briefing.pdf>

As noted in above, the ESJTP should make clear what percentage of the 5GW and 25GW targets will be met by way of green hydrogen. While green hydrogen is certainly preferred to blue hydrogen, there are still big questions to be asked around the necessity of renewable hydrogen and the knock on effects renewable hydrogen could have on the pursuit of electrification and the diversion of renewable electricity. Important questions as to how the Scottish Government's hydrogen ambitions will impact on the natural environment and material and mineral resources due to the scale of renewables required must also be addressed.

5GW of green hydrogen would require 80% of current renewable energy generation in Scotland. This would be used solely to meet green hydrogen energy demands. Additionally, using green hydrogen in industry would require nearly twice as much new renewable energy capacity compared to electrification technologies³⁸.

Green hydrogen should not be made from bioenergy because of the huge land footprint and the extremely low efficiencies of bioenergy coupled with energy-efficient hydrogen production.³⁹ See our response to Q17 for more.

Given the energy penalty associated with renewable hydrogen and the more cost effective, efficient and commercial advanced option of direct electrification, the Scottish Government should commit to a clear policy that in the areas where green hydrogen is the only option for reducing emissions (after demand reduction) - such as in cement production - that rules are put in place to ensure that green hydrogen producers fund or build the development of the new renewable installations needed to make it. This would ensure that any renewable energy used to create green hydrogen would be additional to existing renewable capacity. Without this there is a serious risk of diverting renewable electricity from existing sources which are needed to decarbonise other important sectors. If renewable electricity is diverted for hydrogen production the grid may compensate for this loss by using fossil fuel power to replace the electricity lost causing an increase in net emissions rather than decreasing them.

Green hydrogen should also not be used as an excuse to continue with high emitting and high consumption industries. Rather the Scottish Government must commit to circular economy principles in waste reduction and management. For example, in the case of cement/concrete, which along with steel is the most carbon intensive material used in construction⁴⁰ it would be prudent for the Scottish Government to consider what projects cement/concrete is specifically necessary for and if other options exist to help decarbonise this area. For example, the construction of new buildings accounts for approximately a fifth of emissions linked to the built environment⁴¹ and the existing tax system does not encourage maintenance in order to increase the lifespan of new buildings⁴². The initial step here would be to provide clear regulation and policy support to encourage maintenance, adaptation and the improvement of pre-existing buildings rather than using cement/concrete - along with other materials - to build new ones.

³⁸ <https://foe.scot/wp-content/uploads/2022/06/Hydrogen-Report-Digital-2.pdf>

³⁹ <https://www.biofuelwatch.org.uk/wp-content/uploads/Hydrogen-and-bioenergy-briefing.pdf>

⁴⁰ <https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/building-surveying-standards/whole-life-carbon-assessment-for-the-built-environment>

⁴¹ <https://www.ukgbc.org/climate-change-2/>

⁴² <https://www.gov.uk/vat-builders>

17. Do you think there are any actions required from Scottish Government to support or steer the appropriate development of bioenergy?

The Scottish Government should not support bioenergy. There is huge global scepticism and scientific evidence against the use of bioenergy supported by leading scientists across the globe. In a recent open letter to decision makers in the United States, European Union, Japan and South Korea 500 scientists noted:

“Regrowing trees and displacement of fossil fuels may eventually pay off this carbon debt, but regrowth takes time the world does not have to solve climate change. As numerous studies have shown, this burning of wood will increase warming for decades to centuries. That is true even when the wood replaces coal, oil or natural gas.”⁴³

Currently the entirety of the UK is dependant by approximately 80% on net imports of wood and wood products in total⁴⁴. Therefore, burning domestic wood to provide energy means that there would potentially be an increase in more wood imports for other purposes such as panel board production. The UK also currently burns 65% of all waste wood that is collected despite a large majority of this being suitable for panel board production.⁴⁵

18. What are the key areas for consideration that the Scottish Government should take into account in the development of a Bioenergy Action Plan?

There are a number of key concerns that the Scottish Government must take into account when considering a Bioenergy Action plan.⁴⁶

- There are no known examples of functioning or scaleable BECCS projects involving biomass combustion.
- BECCS is not inherently carbon-neutral or carbon-negative.
- Proposed BECCS plants in Scotland would require building new, unevidenced and large biomass plants that would be extremely expensive. See our answers to questions 15 and 36 - 39.
- BECCS requires significant land and agrochemical inputs which would have negative impacts on agriculture and biodiversity.
- CCS has a high energy penalty, hence significantly more biomass would need to be burned in a BECCs than in a conventional biomass plant to generate the same energy output.
- BECCS distracts from the urgent transformation needed in electrification and diverts policy support and finance away from readily available solutions that have been proven to reduce emissions.

⁴³ (<https://www.woodwellclimate.org/letter-regarding-use-of-forests-for-bioenergy/>)

⁴⁴ (https://cdn.forestresearch.gov.uk/2022/09/Ch3_Trade_2022.pdf).

⁴⁵ (<https://communitywoodrecycling.org.uk/what-we-do/recycling-wood-in-the-uk/>),

⁴⁶ <https://foe.scot/wp-content/uploads/2020/07/BECCS-Briefing-from-Biofuelwatch-and-Friends-of-the-Earth-Scotland.pdf>

For these reasons Friends of the Earth Scotland believes the Scottish Government should not support bioenergy and should instead focus on developing wind, solar and tidal.

19. How can we identify and sustainably secure the materials required to build the necessary infrastructure to deliver the energy strategy?

The lack of consideration of the material demands associated with the ambitions outlined in the draft ESJTP is a serious and major shortfall of the Scottish Government's proposals. Throughout the ESJTP, existing and new policies rely on an assumption that materials will be readily available. However, recent shocks to global supply chains have proven this should not be taken for granted. Demand for materials is rising exponentially as many countries increase their energy generation.

The Scottish Government already recognises the importance of material demand to the Energy Strategy. Responding to a question after his Ministerial statement on the Energy Strategy, the Cabinet Secretary, Michael Matheson, admitted that *"there will be material constraints that will have an impact on roll out of some technology"*⁴⁷.

Despite this understanding, the Scottish Government is choosing to risk the integrity of the entire ESJTP, as our climate obligations, by ignoring the material demands of decarbonisation pathways and generation / export ambitions. Policy proposals, from heat pumps, to wind turbines and electric cars, and a hydrogen export industry, must consider the supply of materials and assess how these can be sourced more sustainably, through reduction of demand and circular economy practices.

Without plans to minimise material demand and devise greener, fairer use of materials, the transition to renewable energy systems may be unsustainable and replicate the injustices of the current system. The environmental and social impacts of mining are well documented and their aggressive practices are felt mainly in the Global South.⁴⁸ Many materials come from countries with poor human rights records and where there are ongoing war or conflict zones. As noted previously, the recent Just Transition Commission report called for the Scottish Government to establish a 'do no harm' approach as a strategic priority to ensure Scotland's just transition is not *"...a trigger for negative economic, climate or social outcomes in other parts of the world, particularly in the Global South where people are already bearing the disproportionate burden of a crisis they did not create."*⁴⁹

The best way to safeguard Scotland's future energy system from concerns about material supply and the impacts of mining is to minimise the requirement of materials for the new ESJTP. Proposals which aim to reduce energy demand should be prioritised, ensuring that demand is reduced as much as possible. For example, improving the energy efficiency of our leaky homes before fitting renewable heating systems will help ensure these systems are no bigger than required. Similarly, supporting and increasing demand for public transport

⁴⁷

<https://www.parliament.scot/chamber-and-committees/official-report/search-what-was-said-in-parliament/meeting-of-parliament-10-01-2023?meeting=14079&iob=127520#2133>

⁴⁸ ['Green mining' is a myth - Friends of the Earth Europe](#)

⁴⁹ [Making the Future - second Just Transition Commission: initial report - gov.scot](#)

and active travel will use significantly less materials than swapping fossil fuel private cars for electric ones.

As well as focusing on demand reduction the ESJTP must demonstrate how the material demands of the future energy system can be met sustainably by:

- Assessing the material demands of proposals in the ESJTP and demonstrating how they can be met sustainably while aligning with circular economy ambitions, carbon impacts and the fair supply of materials globally;
- Setting total energy demand reduction targets, in line with climate change targets, which will ensure material demand is minimised;
- Planning for sustainable material supply of Scotland's Energy Strategy which should prioritise the following areas: material supply for energy infrastructure; encouraging domestic scrap steel recycling; considering how to minimise the material impacts of consumer electricity and heating policies; and managing end of life of wind turbines;
- Providing a nationally coordinated assessment of how to optimise the siting, managing and connecting infrastructure for the energy transformation, for example consideration of the scale and location of the supply chain of scrap steel processing in Scotland.
- The Scottish Government should focus its understanding of sustainable material demand on those materials which are most critical to the Energy Strategy. This may be because the material is required in huge quantities, like steel, because it is scarce like rare earth elements, or because there are environmental and social impacts from obtaining them, like copper, lithium and nickel.
- Aligning any generation / export ambitions with the principles of a *global* just transition and adapting policies accordingly.

North Sea Oil and Gas

20. Should a rigorous Climate Compatibility Checkpoint (CCC) test be used as part of the process to determine whether or not to allow new oil and gas production?

We are of the view that the focus on the Climate Compatibility Checkpoint is a distraction, as climate science is clear that there should be no new oil and gas. Scientific evidence overwhelmingly indicates that we cannot allow any new oil and gas to be extracted or developed if we want to stay below the critical 1.5°C warming threshold of the Paris Agreement.

The IPCC's 6th Assessment Report highlighted that "if investments in coal and other fossil fuel infrastructure continue, energy systems will be locked-in to higher emissions making it harder to limit warming to 2°C or 1.5°C"⁵⁰. Furthermore, the International Energy Agency (IEA) report, 'Net Zero by 2050: A Roadmap for the Global Energy Sector', states that there

⁵⁰https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf

is "no need for investment in new fossil fuel supply" and there should be "no new oil and gas fields approved for development"⁵¹.

In June 2022, a UN Summit - Stockholm 50+ - for the first time recommended a "phase out of fossil fuels while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for financial and technical support towards a just transition."⁵²

However, the United Nations Environment Programme 2021 Production Gap report shows that the world's governments are on track to produce 110% more fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C. The report finds that "global fossil fuel production must start declining immediately and steeply to be consistent with limiting long-term warming to 1.5°C."⁵³ IISD research says that for only a 50% chance of hitting our 1.5°C target, 40% of developed reserves must stay in the ground.⁵⁴

Clearly, not only should there be no new oil and gas production; what is needed in fact is a constriction of existing oil and gas production. The Phase out Pathways for Fossil Fuel Production report by the Tyndall Centre for Climate Research has calculated equitable phase out dates for oil and gas producing countries, and finds that for a 67% chance of limiting warming to 1.5°C, the UK and other rich nations must end oil and gas production by 2031⁵⁵. Therefore, undeveloped licences should be revoked, and fields currently in production must be phased out by 2031.

A climate compatibility checkpoint to test each individual project is unnecessary because we already know that no new oil and gas developments will be compatible with a healthy climate. While any truly sufficient and rigorous Climate Compatibility Checkpoint would reach this outcome anyway, a presumption against any new exploration or development and a phase out of existing production by 2031 would eliminate the need for a test in the first place and provide a clear direction of travel for the sector.

21. If you do think a CCC test should be applied to new production, should that test be applied both to exploration and to fields already consented but not yet in production, as proposed in the strategy?

As we highlight above there should be no CCC test as there should be no new oil and gas production. However, the current test should obviously be applied to both exploration and new production in existing fields. In addition, a target date for phase out of existing production by 2031 should be set, enabling a managed and just transition.

⁵¹ <https://www.iea.org/reports/net-zero-by-2050>

⁵² <https://wedocs.unep.org/bitstream/handle/20.500.11822/40110/Key%20Messages%20and%20Recommendations%20-%20Formatted.pdf?sequence=1&isAllowed=y>

⁵³ <https://productiongap.org/2021report/>

⁵⁴ <https://www.iisd.org/system/files/2022-06/turning-glasgow-statement-into-action.pdf>

⁵⁵ [https://www.research.manchester.ac.uk/portal/en/publications/phaseout-pathways-for-fossil-fuel-production-within-pariscompliant-carbon-budgets\(c7235a8e-e3b1-4f44-99de-c27958c03758\).html](https://www.research.manchester.ac.uk/portal/en/publications/phaseout-pathways-for-fossil-fuel-production-within-pariscompliant-carbon-budgets(c7235a8e-e3b1-4f44-99de-c27958c03758).html)

22. If you do not think a CCC test should be applied to new production, is this because your view is that:

- **Further production should be allowed without any restrictions from a CCC test;**
- **No further production should be allowed [please set out why];**
- **Other reasons [please provide views].**

For reasons set out in response to Q20, no further production should be allowed. This means a presumption against any new exploration or development and a phase out of existing production within this decade.

23. If there is to be a rigorous CCC test, what criteria would you use within such a test? In particular [but please also write in any further proposed criteria or wider considerations]

• **In the context of understanding the impact of oil and gas production in the Scottish North Sea specifically on the global goals of the Paris Agreement, should a CCC test reflect –**

- A) the emissions impact from the production side of oil and gas activity only;**
- B) the emissions impact associated with both the production and consumption aspects of oil and gas activity (i.e. also cover the global emissions associated with the use of oil and gas, even if the fossil fuel is produced in the Scottish North Sea but exported so that use occurs in another country) – as proposed in the Strategy;**
- C) some other position [please describe].**

As noted above, any truly rigorous CCC test could only find that further oil and gas production is incompatible with a healthy climate. A presumption against any new exploration or development and a phase out of existing production by 2031 is a more appropriate course of action.

However, if such a test is to go ahead it must take account of B) the emissions impact associated with both the production and consumption aspects of oil and gas activity. The vast majority (80%) of the emissions produced from oil and gas are from its use (scope 3 emissions). Ignoring these emissions is misleading and allows for the greenwashing of the fossil fuel industry. Assessing scope 3 emissions would force oil and gas companies to take responsibility for their emissions and discourage them from investing in continued extraction, enabling investment to be redirected to renewables. This is especially important as 81% of oil from the north sea is exported, and therefore its end uses are not accounted for under domestic climate targets.

• **Should a CCC test take account of energy security of the rest of the UK or European partners as well as Scotland? If so, what factors would you include in the assessment, for example should this include the cost of alternative energy supplies?**

Yes. A climate compatibility checklist that took account of energy security would undoubtedly find that renewables are more secure, and more affordable than oil and gas on the whole.

As oil and gas reserves dwindle, prices will only rise. For example, offshore wind is currently nine times cheaper than gas.⁵⁶

Reliance on oil and gas keeps people vulnerable to spikes in their prices caused by supply issues such as the invasion of Ukraine and sanctions on Russia. Renewables are more reliable, less volatile, cheaper, less centralised and more evenly distributed. Scotland's oil reserves do not contribute to energy security or bringing down cost of living - the current draft of the ESJTP states that '*Scotland's status as a fossil fuel producer has not insulated Scotland from the associated cost of living crisis because as a globally traded commodity, prices are set by international markets and Scotland's offshore gas reserves are too small to meaningfully change global gas prices*'.⁵⁷

When accounting for energy security any rigorous and robust CCC would find that renewables provide more energy security and will keep costs lower than volatile oil and gas. Publicly owned and community owned renewables, prioritising public good objectives would bring even more energy security as they are not driven by the goal of private profit.

Furthermore 93% of Scotland's crude oil, and 40% of Grangemouth's refined oil, is exported⁵⁸. The Ernst & Young report produced for the Scottish Government states that "Scottish demand for O&G is not directly linked to domestic production"⁵⁹ - increased oil and gas production will not increase energy security.

• *Should a CCC test assess the proposed project's innovation and decarbonisation plans to encourage a reduction in emissions from the extraction and production of oil and gas?*

No. Decarbonisation of oil fields - i.e. powering oil rigs with renewable energy - is largely a distraction from emissions caused by burning the oil and gas these fields extract. The oil and gas from Scotland that is burned abroad still contributes to Scotland's scope 3 emissions and to climate breakdown. Even if the extraction of oil and gas was somehow able to be 100% clean and renewable, there is no means of burning new oil and gas that would be compatible with global climate targets and attempts to limit global warming to 1.5°C. While efforts to decarbonise production ahead of wind down within this decade should be encouraged, they should not be allowed to enable any additional exploration, development or production.

• *In carrying out a CCC test , should oil be assessed separately to gas?*

No. Both oil and gas need to be phased out as quickly as possible. Gas cannot be relied on as a bridge fuel. Any truly rigorous CCC test would find that any new exploration or development of north sea oil or gas is incompatible with our climate targets and our attempts to limit global warming to 1.5°C.

⁵⁶

<https://www.carbonbrief.org/analysis-record-low-price-for-uk-offshore-wind-is-four-times-cheaper-than-gas/>

⁵⁷ p87

⁵⁸ <https://www.energy-system-and-just-transition-independent-analysis.co.uk/summary-report.pdf>

⁵⁹ <https://www.energy-system-and-just-transition-independent-analysis.co.uk/summary-report.pdf>

Paris Agreement goals

The draft ESJTP says that the Scottish Government are consulting on whether '*The impact of any new oil and gas production on global greenhouse gas emissions in the context of meeting the Paris Agreement goals, particularly in efforts to limit warming to 1.5°.*' should be considered as part of a more rigorous climate compatibility checkpoint, on page 98. We note that this has not been raised in this, or any other consultation question. Clearly, impact on meeting the goals of the Paris Agreement, in particular the aim of limiting warming to the critical 1.5°C threshold, and the context of equity and common but differentiated responsibility around that, should be part of any CCC.

24. As part of decisions on any new production, do you think that an assessment should be made on whether a project demonstrates clear economic and social benefit to Scotland? If so, how should economic and social benefit be determined?

True economic and social benefit to Scotland would come from no longer relying on oil and gas, and shifting to a renewable energy economy that prioritises demand management and public good over private profit.

When considering 'economic benefits' it is important that short term profits are not prioritised over damage to the climate which will cause huge economic and social harm in the long run. Economic and social benefit to Scotland needs to be determined on a much larger and longer scale than present practice. Oil and gas remains competitive in the market at the moment as the wider costs of burning fossil fuels are not accounted for. If they were - through, for example, carbon pricing - oil and gas would clearly no longer be an economically sustainable industry.

It is important to note that the benefits of oil extracted largely goes to fossil fuel company bosses and shareholders, who are at present making record breaking profits while prices continue to rise for the people of Scotland and the cost of living crisis deepens.⁶⁰ Huge profits for oil and gas companies are not bringing economic benefits to Scotland where thousands of people are being forced to choose between heating and eating.

Finally we must note that production is declining anyway and oil is becoming increasingly expensive to extract. The taxation system in the UK props up the oil and gas industry, without these public subsidies the industry would struggle. There would, however, be more public money to spend on incentivising renewables and energy efficiency measures. It is clear that investment is needed now to get the renewables industry to where it needs to be to meet demand. The Ernst & Young report says £21.5bn of investment is needed in offshore wind alone. A cleaner, greener, environment and economy would be more beneficial to the people of Scotland socially and economically than continued fossil fuel extraction.

25. Should there be a presumption against new exploration for oil and gas?

⁶⁰ <https://www.theguardian.com/business/2022/may/13/oil-gas-producers-first-quarter-2022-profits>

Yes. As per our responses above, a presumption against any new exploration or development and a phase out of existing production by 2031 is necessary to play our part in meeting the critical 1.5°C threshold under the Paris Agreement, and provide a clear direction of travel for the energy sector, enabling a managed and just transition.

26. If you do think there should be a presumption against new exploration, are there any exceptional circumstances under which you consider that exploration could be permitted?

No. There are no exceptional circumstances that would warrant the death and displacement of millions of people, mass extinction and ecosystem collapse that will occur if we do not limit global temperature increases to the critical 1.5°C threshold. The science is clear; no new oil or gas can be extracted if we are to have any serious chance to a liveable planet.

Chapter 4 Energy demand

Heat in Buildings

27. What further government action is needed to drive energy efficiency and zero emissions heat deployment across Scotland?

There are a number of actions the Scottish Government could take to drive energy efficiency and zero emissions heat deployment in Scotland.

- Support the retro-fitting of homes to increase energy efficiency.
- Subsidise and support alternative forms of low carbon heating such as heat pumps.
- Enforce minimum energy efficiency standards in the private rented sector
- Support households and communities to develop district heating networks.
- Introduce a moratorium on gas infrastructure in new housing developments.

Friends of the Earth Scotland supports the positions outlined in the Existing Homes Alliance response to this question.

Energy for transport

28. What changes to the energy system, if any, will be required to decarbonise transport?

Huge changes are needed to the energy system if we want to decarbonise transport. The Scottish Government is far behind schedule for its planned reduction in car km, as set out in

the 20% km reduction commitment, and the modelled transport emissions as set out in the Climate Change Plan Update.

The Scottish Government's 'Zero Emission Energy for Transport' report concluded that only Policy Scenario 3 achieved the behaviour change necessary to meet emission reduction targets.⁶¹ Policy Scenario 3 necessitates a "modal shift from cars and planes to public and active travel modes, and reduced travel demand through trip shortening (facilitated through measures such as 20-minute neighbourhoods) and trip avoidance (facilitated through measures such as teleconferencing)".

Yet the policy agenda to achieve this necessary modal shift is absent from the ESJTP, or from any other Scottish Government strategies. The 'Reliance Restricted' project, commissioned by the Scottish Government and delivered by Ernst & Young, has a very narrow set of policy prescriptions. There are no redistributive measures to address the reality that wealthy people drive and fly more often, polluting poorer communities, and there are very few fiscal measures overall.

The policy agenda for reduced overall demand and modal shift would need to include:

- Significantly increased investment in, and public control over, public transport. We estimate public transport needs a further £1.6bn investment per annum, to justly reduce emissions and car traffic.
- Explore fiscal measures such as congestion charging, road user-charging and frequent flyer levy, which raise revenue for sustainable transport projects.
- Deliver the commitments of the Bute House Agreement, including at least 10% of the transport budget going towards active travel.
- Much faster delivery of bus priority measures such as bus lanes on trunk roads, and bus gates in built-up areas.
- Restrictions on car use in urban areas, including Low Emission Zones becoming Zero Emission Zones from 2030.
- Bringing forward the completion of planned public transport infrastructure projects to 2030.

Changing our energy system from fossil fuels to electric and the subsequent shift from a fleet of fossil fuel cars to a fleet of electric cars is not good enough. The resources required to produce electric cars on that scale would be devastating to the global south and would continue to produce particulate matter pollution from road and vehicle degradation. Increasing investment in active travel and public transport is the only feasible option to tackle the climate crisis in a just and equitable way.

The current framework for a Just Transition for Transport - incorporating CAFS2, STPR2, the 20% car km reduction routemap - are entirely insufficient. Key issues have not been addressed, such as ensuring a skills and development pathway for zero carbon vehicle manufacturing, a long-term pathway to zero emission cities, and addressing the unequal costs and taxation on transport that benefit the wealthy.

⁶¹<https://www.transport.gov.scot/media/51571/updated-zero-emission-energy-for-transport-forecasts-national-dem-and-forecasts-for-electricity-and-hydrogen.pdf>

The graphic under '6.4 Energy Demand route map to 2045' rightly points to the 20% car km reduction as a key plank of reducing demand within the transport sector. However, it is far from clear if this commitment will be fulfilled. The policies are not in place to achieve it.

This is also true of the decarbonisation of all domestic flights by 2040; this is certainly a worthwhile aim that would help set Scotland on course for net zero in 2045, but the Energy Strategy - nor any other document - sufficiently sets out how it will be achieved.

29. If further investment in the energy system is required to make the changes needed to support decarbonising the transport system in Scotland, how should this be paid for?

Transport is a source of inequality. Wealthy people fly more and drive more. The negative consequences of this - such as air pollution, traffic accidents, and the extreme impacts of climate breakdown - are disproportionately borne by people on lower incomes. By not recognising this, the taxation of transport is regressive.

Changes to our energy system, for example in transport, heating, or lighting, should be shouldered by those who have the most and can afford to give the most. Increased investment in the energy system to support decarbonising the transport system is urgently needed and should in part come through a shifting of fossil fuel subsidies and tax breaks from the oil and gas industry to the renewables industry. Furthermore, a frequent flyer levy and a road-user charging system would generate revenue to invest in decarbonisation of transport. Any revenue generated through these means must then be invested in our public transport, to reduce fares, improve the fleet and expand services.

30. What can the Scottish Government do to increase the sustainable domestic production and use of low carbon fuels across all modes of Transport?

The Scottish Government should not be encouraging or increasing the blanket use of 'low-carbon' fuels for all modes of transportation. As detailed in Question 15, the term 'low-carbon' is incorrect and misleading and the Scottish Government should provide its rationale for this classification.

The ESJTP acknowledges in Figure 2.1 on page 78 that there is not a significant role for hydrogen use in light vehicles including vans and cars due to the prevalence of alternatives and a lack of market opportunity for hydrogen. There is a growing base of evidence that would support this approach. For example, on journeys where no alternative to a car is possible, electric cars are more efficient and more cost effective than hydrogen cars.⁶² The infrastructure for electric charging vehicles is already much more advanced and therefore much more competitive than hydrogen. The Scottish Government should be encouraging people to use active and public transport measures that are increasingly electric rather than encouraging alternative fuel modes in private car usage. Electric cars still carry significant emissions in their creation, maintenance and degradation. To achieve our net zero targets

⁶² <https://foe.scot/wp-content/uploads/2022/06/Hydrogen-Report-Digital-2.pdf>

the Scottish Government must see a significant increase in public and active travel and a significant decrease in private car transport.

Though hydrogen is often highlighted as an option for buses, in Scotland there has been a notable effort in electrification of these models. In the Scottish Government's most recent funding support for operators, 276 electric buses were purchased. As electric vehicle technology advances, range anxiety reduces.

Currently, Scotland's only tram network, located in Edinburgh, is fully electric. Additionally, Scotland's train network is undergoing a significant process of electrification. At present, approximately 29% of the total track length of Scotland's railways is electrified, though this constitutes around 76% of all passenger journeys in terms of proportion of total vehicle kilometres under electric traction⁶³. By 2045, Transport Scotland aims to have the majority of the rail network fully electric.

The amount of materials Scotland required for the energy transition is heavily influenced by the political choice around key demand reduction policies. For example, a future based on private transport is likely to have much higher material costs than a public transport one. Replacing Scotland's 2.5 million fossil fuel cars and 4,400 buses, like for like, would require 20,200 tonnes of lithium. If more journeys were made by bus, and car numbers were reduced as a result, less lithium would be required. If the proportion of bus journeys in Scotland increased to 30% (which is the same as the proportion of journeys made by public transport in London today) lithium requirements would be 13,800 tonnes (32% less)⁶⁴.

We recommend that the Scottish Government consider the material demands for different transport decarbonisation options, and adapt policy accordingly.

31. What changes, if any, do you think should be made to the current regulations and processes to help make it easier for organisations to install charging Infrastructure and hydrogen/low carbon fuel refuelling Infrastructure?

As highlighted above we would call on the Scottish Government to prioritise making it easier for people to access public and active transport.

32. What action can the Scottish Government take to ensure that the transition to a net zero transport system supports those least able to pay?

In terms of transport we know that car ownership and usage is linked with wealth, and this is more pronounced for electric cars. Any transport system that prioritises private cars - regardless of how they are fuelled - excludes those on the lowest incomes who disproportionately walk and take the bus.

⁶³ <https://www.transport.gov.scot/media/47906/rail-services-decarbonisation-action-plan.pdf>

⁶⁴ Based on calculation by Friends of the Earth Scotland (2023) Transition Minerals report: <https://foe.scot/wp-content/uploads/2023/05/DRAFT-Unearting-Injustice-report.pdf>

This means our public realm and our bus services need to be prioritised if we want to reduce rather than widen transport inequality as part of an energy transition. More frequent, reliable public transport that covers a wider range of Scotland will be instrumental in ensuring those least able to pay are able to take advantage of the transition to net zero. Returning buses to public ownership and making public transport free at the point of use would be effective measures in addressing transport inequalities and support the transition to net zero in a socially just and beneficial way.

Transport inequalities are even more stark when we look at flying⁶⁵. Aviation is linked with wealth and, as with cars, the negative consequences are disproportionately borne by those on the lowest incomes. A system of progressive taxation on international flights, that was able to tax more for each additional flight, could be used to reinvest in improving surface transport. This would reduce inequality and fossil fuel use.

33. What role, if any, is there for communities and community energy in contributing to the delivery of the transport transition to net zero and, what action can the Scottish Government take to support this activity?

As stated above, the Scottish Government must set clear targets for Local Authority ownership of renewable energy projects, separating these, and community energy (as opposed to private, locally owned energy) from other existing targets to ensure clarity and focus. This will ensure that those who cannot afford to, or do not have the resources to, establish their own means of energy generation will be able to access clean, reliable, affordable community energy. Alongside this the Scottish Government can make community ownership more accessible by ensuring access to financial and regulatory support for individuals and communities. By doing so the Scottish Government would be able to ensure that community energy can be used as part of electric vehicle charging infrastructure.

Small scale community projects such as bike repair workshops can provide much needed support for people to maintain their own forms of local sustainable transport. Projects such as these, run by community groups and community schemes, must be delivered and supported, financially and administratively, with guidelines provided by the Scottish Government.

34. Electric vehicle batteries typically still have around 80% of their capacity when they need replacing and can be used for other applications, for example they can be used as a clean alternative to diesel generators. What, if anything, could be done to increase the reuse of these batteries in the energy system?

Peer reviewed research⁶⁶ has shown that reuse of batteries is likely to be an important part of creating a materially-efficient energy system. This subject must be explored fully and urgently to create an approach which maximises energy and material efficiency integrated into the Energy Strategy.

⁶⁵ <https://inequalityintransport.org.uk/exploring-transport-inequality/who-travels-air>

⁶⁶ For example, Xu et al. (2023) [Electric vehicle batteries alone could satisfy short-term grid storage demand by as early as 2030](#)

The Scottish Government should consider:

- How Scotland can influence the design of EV batteries to maximise environmental savings across their whole life cycle, including material extraction, reuse, recycling and disposal;
- Policies which enable optimal battery use and reuse based on environmental and social impacts. This may include a hierarchy of battery use which prioritises the most important energy requirements and material demands;
- Remanufacturing opportunities, in Scotland and elsewhere, and how these can be developed and supported;
- The safe and environmentally sustainable management of battery waste once these products reach the end of their useful lives;
- How to prevent lock-in to battery recycling beyond requirements (see below).

A challenge of any system which aims to create a product out of a waste is how to avoid creating 'lock-in' to unnecessary demand. Over-capacity of waste incinerators across Europe is a clear example of lock-in where the increasing demand for waste from incinerator operators sustains high volume waste production and inhibits recycling efforts. There are similar environmental dangers of lock-in for battery recycling. Growing battery recycling facilities should not be used as an excuse to allow energy storage demand to rise beyond the level required or for growth of unnecessary private EVs. Lock-in to unnecessary battery recycling could result in increasing the environmental damage created by batteries, rather than reducing it.

Energy for agriculture

35. What are the key actions you would like to see the Scottish Government take in the next 5 years to support the agricultural sector to decarbonise energy use?

n/a

Energy for Industry

36. What are the key actions you would like to see the Scottish Government take in the next 5 years to support the development of CCUS in Scotland?

The Scottish Government should end its overreliance on the development of CCUS and end its political and financial support of the industry.

Despite the overwhelming scientific evidence and growing list of case studies of failed⁶⁷ and

⁶⁷ <https://ieefa.org/resources/carbon-capture-crux-lessons-learned>

underperforming CCUS projects, the Scottish Government is continuing to give significant sums of public money and policy support to CCUS in Scotland whilst ignoring the desperate need to map out a plan for when NETs fail to materialise at the pace predicted. The Scottish Government were advised by the ECCLR committee in the last session of the Scottish Parliament to “set out a plan B for how equivalent abatement could be achieved” without NETs⁶⁸ and has thus far failed to do so. In May of 2022 the Scottish Government went on to admit that NETs will not deliver at the pace assumed in the Climate Change Plan update⁶⁹ and yet are still failing to provide an alternative plan for carbon reduction when NETs fail to deliver. This is entirely unacceptable, dangerous and could have serious effects on Scotland’s ability to hit its climate targets. After admitting that it is behind on delivering on NETs the Scottish Government must urgently set out a different way forward.

Scotland's 2019 Climate Change Act establishes in law the concept of a "fair and safe Scottish emissions budget". Extrapolating from remaining global carbon budgets for 1.5°C and 2°C, leading climate scientist Professor Kevin Anderson has made clear that such a budget "is inconsistent with any realistic interpretation of the roadmaps of CCS-based power generation".⁷⁰ For every megatonne of carbon released in the power sector, a megatonne of carbon cannot be released elsewhere. The Scottish Government must provide a detailed rationale of why, despite the limited carbon budget and alternative options to decarbonise power generation, it is so enthusiastically supporting CCUS in power generation.

The number of CCS projects that have failed or are underperforming significantly outnumber performing ones. Those that have reached scale have been in enhanced oil recovery, a harmful process which is used to pull every last drop of oil out of the ground and which cannot be allowed to happen if we are to meet our climate targets.

In some applications such as cement production where emissions are hard to abate, it may be prudent to use CCS. However as noted in Question 16, other measures to decrease emissions in cement, including reducing consumption and limiting projects that use cement - where possible - should be prioritised.

37. How can the Scottish Government and industry best work together to remove emissions from industry in Scotland?

The best way to stop emissions from entering the atmosphere is to not create them in the first place. As noted in below, Question 38, there is now minimal to no role for CCS in power generation. Scotland needs to end all fossil fuel extraction by 2031 in order to meet its fair share of emissions reductions and reach zero emissions.

⁶⁸https://archive2021.parliament.scot/S5_Environment/Reports/ECCLR_2021.03.04_OUT_CS_CCPu_Report.pdf

⁶⁹<https://www.gov.scot/binaries/content/documents/govscot/publications/progress-report/2022/05/climate-change-plan-monitoring-reports-2022/documents/climate-change-plan-monitoring-reports-2022/climate-change-plan-monitoring-reports-2022/govscot%3Adocument/climate-change-plan-monitoring-reports-2022.pdf>

⁷⁰https://www.parlaimaid-alba.scot/-/media/files/committees/net-zero-energy-and-transport-committee/correspondence/2022/20220310_ccus_anderson.pdf

Demand reduction, and electrification of industry should be prioritised where possible, while there may be a limited role for CCS (after demand reduction) in dealing with truly residual emissions from hard to abate industries such as cement.

38. What are the opportunities and challenges to CCUS deployment in Scotland?

Scottish Government's own analysis has shown that negative emissions technologies including CCS are not going to come on stream in time to contribute meaningfully towards 2030 targets. Such technologies are demonstrably incapable of contributing to emissions reductions over the next decade, and serve only to prolong the life of the fossil fuel industry and distract from the real solutions to the climate crisis.

Scotland's 2019 Climate Change Act establishes in law the concept of a "fair and safe Scottish emissions budget". Extrapolating from remaining global carbon budgets for 1.5°C and 2°C, leading climate scientist Professor Kevin Anderson has made clear that "set specifically within this context there is now little to no role for CCS in either power generation or blue hydrogen production"⁷¹

The Scottish Government's overreliance on Negative Emissions Technologies (NETs) in plans to meet the targets set out under the 2019 Act has been heavily criticised, with both Holyrood committees and official advisers in the Climate Change Committee urging Ministers to come up with an alternative plan. The Scottish Government must signal an end to overreliance on CCUS into the ESJTP, instead prioritising a shift to 100% renewable energy system by 2030.

There is a clear historic failure of delivering Carbon Capture and Storage at the capture, transportation and storage stages of the process. The proposed deployment assumes highly optimistic capture rates and timeframes for operation which are not backed up by evidence. The knock on impact of failure to deliver projected capture rates on our ability to meet climate targets is too high a risk to centre CCUS deployment in the way current Scottish Government policy does.

39. Given Scotland's key CCUS resources, Scotland has the potential to work towards being at the centre of a European hub for the importation and storage of CO₂ from Europe. What are your views on this

We strongly oppose this proposal. It would be dangerous, environmentally and socially, to make Scotland's Europe's dumping ground for CO₂.

The IPCC's Carbon Dioxide Capture and Storage Special Report stated: "CO₂ storage is not necessarily permanent. Physical leakage from storage reservoirs is possible via (1) gradual and long-term release or (2) sudden release of CO₂ caused by disruption of the reservoir."⁷²

⁷⁴https://www.parlaimaid-alba.scot/-/media/files/committees/net-zero-energy-and-transport-committee/correspondence/2022/20220310_ccus_anderson.pdf

⁷² <https://ieefa.org/resources/carbon-capture-has-long-history-failure>

Making Scotland Europe's dumping ground for CO₂ risks potential local environmental impacts as well as the global climate impacts of leakage, all so we can continue to pull fossil fuels out of the ground and prop up the oil and gas industry.

The long-term monitoring of injected CO₂ is another challenge. Who will monitor and pay for the monitoring of any stored CO₂ and how will this affect future generations should any leak out? Trapped CO₂ underground will need monitoring for centuries to ensure it does not leak back into the atmosphere. There is no way to truly guarantee that if CO₂ is captured that once stored it will stay permanently underground and not leak into the atmosphere.

There are also case studies of gas failing to stay underground that the Scottish Government should take note of. The Institute of Energy, Economics and Financial Analysis⁷³ highlight the California Aliso Canyon gas leak in 2015 as "the worst man-made greenhouse gas disaster in U.S. history when 97,000MT of methane leaked into the atmosphere"

They also highlight the Salah project in Algeria, a CCS project that cost approximately \$2.7 billion and started injection of CO₂ in 2004. In 2011 the project was suspended due to worries over the safety and integrity of the carbon store and movement of injected CO₂ underground.

The precautionary principle, and the rectification at source principle, both of which the Scottish Government committed in its Environment Strategy, are relevant in this respect. Emissions should be cut at source, and the risks of opening up the north sea as Europe's dumping ground in terms of the potential of leaks should clearly be ruled out on a precautionary basis.

Chapter 5: Creating the conditions for a net zero energy system

40. What additional action could the Scottish Government or UK Government take to support security of supply in a net zero energy system?

n/a

41. What other actions should the Scottish Government (or others) undertake to ensure our energy system is resilient to the impacts of climate change?

As noted in answers above, the greatest means of securing a resilient energy future would be to shift rapidly and quickly away from fossil fuels towards a fully renewable energy system, with public ownership playing a significant role to ensure public good objectives are prioritised.

Reliance on oil and gas keeps Scotland vulnerable to spikes in prices exacerbated by supply issues such as the Russian invasion of Ukraine and the subsequent sanctions on Russia.

Furthermore the oil and gas industry is in decline. Even the most conservative estimates of

⁷³ <https://ieefa.org/resources/carbon-capture-has-long-history-failure>

oil and gas supply show that we must move away from oil and gas and towards renewables. A rapid move towards a fully renewable energy system is the best way to guarantee our energy security.

Renewables are more reliable, less volatile, cheaper and have the opportunity to be less centralised and more evenly distributed than fossil fuels.

There are a whole series of recommendations directed at the UK Government in our report 'Our Power: Offshore Workers Demands for a Just Energy Transition', which sets out ten key demands identified through an in-depth consultation process with offshore workers. The demands map out a blueprint for a Just Transition, which won the support of over 1,000 offshore workers surveyed. Additional research was carried out to flesh out policy pathways to achieve them. We encourage the Scottish Government to express support for and advocate for these in the final ESJTP. For brevity, we do not set these recommendations out here but they can be found by accessing the report [online](#).⁷⁴

42. Are there any changes you would make to the approach set out in this route map?

'Presumptions against' conventional onshore extraction and coal are very welcome but should be re-articulated as positions of no support for clarity and certainty.

The changes outlined throughout this consultation response outline the changes we would like to see across the route map.

43. What, if any, additional action could be taken to deliver the vision and ensure Scotland captures maximum social, economic and environmental benefits from the transition?

n/a

Impact assessment questions

44. Could any of the proposals set out in this strategy unfairly discriminate against any person in Scotland who shares a protected characteristic? These include: age, disability, sex, gender reassignment, pregnancy and maternity, race, sexual orientation, religion or belief.

⁷⁴ Full report: <https://foe.scot/wp-content/uploads/2023/03/Our-Power-Report.pdf> Briefing on Demand 8: Public Ownership for Public Good https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-8-Our-Power_FINAL.pdf and Briefing on Demand 10: No Community Left Behind https://foe.scot/wp-content/uploads/2023/03/Demand-Briefing-10-Our-Power_FINAL.pdf

There is significant evidence that the climate crisis will have a disproportionately large effect on people on low-incomes, disabled people, and women.⁷⁵ Failure to address the climate crisis would mean the Scottish Government failing to adequately protect people who fall under those characteristics. To continue to fail to meet our climate targets and play our part in meeting the critical 1.5oC threshold would discriminate against people with these protected characteristics.

45. Could any of the proposals set out in this strategy have an adverse impact on children's rights and wellbeing?

Failure to adequately address the climate crisis will have an adverse impact on children's rights and wellbeing. Children have the right to grow up in a healthy, clean, green environment. The ESJTP does not go far enough in setting out a credible pathway to emissions reductions in the energy sector, and therefore playing our part in ensuring a climate safe future.

46. Is there any further action that we, or other organisations (please specify), can take to protect those on lower incomes or at risk of fuel poverty from any negative cost impact as a result of the net zero transition?

The cost of living crisis is expected to push millions across the UK into poverty and a further 210,000 households in Scotland into fuel poverty.⁷⁶ This inflation is being driven by massive rises in energy prices⁷⁷ at the same time as companies like Shell and BP post record-breaking profits.⁷⁸ Our continued reliance on fossil fuels in our energy system is enabling massive profits to be extracted while simultaneously leaving Scotland exposed to volatile prices and driving us closer to climate breakdown.

Clarifying that the decarbonisation by 2030 ambition of ESJTP will be met through a fully renewables system, and achieving necessary demand reductions by focusing on home energy insulation and improved public transport, will protect those on lower incomes from fuel poverty and the current cost of living crisis.

The Scottish Government must:

- Explore every available lever to support households, particularly those on low-incomes, to urgently tackle falling living standards. This includes measures which redistribute wealth by raising taxes on the wealthiest, raising pay for public sector workers and improving tenants and employment rights.
- Future-proof our energy system by facilitating the fastest possible transition away from fossil fuels through a rapid expansion of renewables, electrification of key sectors and improved storage technology.
- Lead the transition by ending the failed market based approach to energy, instead

⁷⁵ <https://www.nytimes.com/2021/08/24/us/climate-crisis-women-katharine-wilkinson.html>

⁷⁶ https://www.eas.org.uk/en/fuel-poverty-set-to-break-the-50-barrier-in-parts-of-scotland_59652/

⁷⁷

https://www.ey.com/en_ru/energy-resources/energodigest/2022/01/inflation-driven-by-energy-prices

⁷⁸ <https://www.bbc.co.uk/news/business-61330552>

prioritising people and planet over corporate interests in the energy transition by establishing a public energy community to support national, municipal and community ownership models and providing energy at affordable prices.

47. Is there further action we can take to ensure the strategy best supports the development of more opportunities for young people?

n/a

Just Transition energy outcomes

48. What are your views on the approach we have set out to monitor and evaluate the Strategy and Plan?

n/a

49. What are your views on the draft Just Transition outcomes for the Energy Strategy and Just Transition Plan?

While the Just Transition outcomes are on the whole welcome, as outlined in response to questions above, the draft ESJTP fails to set out a credible plan for delivering on them.

50. Do you have any views on appropriate indicators and relevant data sources to measure progress towards, and success of, these outcomes?

n/a